R7-110 Each list shall consist of 1000 encryption keys, numbered from 1 to 1000, and 10 Key Encryption Keys (KEK), numbered from 1001 to 1010. Only encryption keys shall be used for digital signatures for normal number portability operations. They shall range in size (if RSA encryption is used) from 600 bits to 900 bits. (Larger keys shall be used in future years.) KEKs shall be used only to transmit a new list of keys, if necessary. The whole new list will be signed using a KEK. KEK sizes shall range from 1000 bits to 1200 bits (if RSA encryption is used). Keys in subsequent list shall be numbered from 2000 to 3010, 3000 to 4010, etc.

R7-111 A new encryption key can be chosen with every message that contains a key identifier. After the usage of a key has stopped, that key shall not be used again. The key shall be changed every time there is a suspicion that the key has been compromised. The key shall be changed at least once a year. The keys used during a year shall be larger than the keys used the previous year by at least 20 bits.

Section 8: Audit Administration

Overview

An audit function will be necessary for troubleshooting a customer problem and also as a maintenance process to ensure data integrity across the entire LNP network. Audit will be concerned with the process of comparing the NPAC view of the LNP network with each service provider's network view.

The service provider network may contain several network nodes designated for local number portability and may also choose to keep its own copy in its respective SMS. As a result, it will not be the responsibility of the NPAC to compare all network nodes but rather upon order of an audit request to have the service provider SMS report if a conflict exists in any of its designated LNP SCPs within its respective LNP network. The local SMS will compare the NPAC view of the data with the SCP view of the data.

Assumptions

SMS will contain the master copy of the data that it administers. Only the data administered over the NPAC SMS to Local SMS interface as a result of LNP subscription management will be audited.

8.1 Service Provider User Functionality

The following specifies the functionality required for audits issued by the service provider. These audit requests shall be issued from the service provider's SOA to the NPAC SMS.

R8-1 Service providers must be able to issue an audit request on a single telephone number.

R8-2 Service providers must be able to issue an audit request for a range of telephone numbers. The size of the range of telephone numbers which can be specified must be a tuneable parameter set by the NPAC.

R8-3 Service providers must be able to specify the scope of an audit by specifying one or more of the following parameters:

(a) Specific service provider network or ALL service provider networks.

(b) Full or partial audits, where the user can specify if one or ALL LNP attributes is to be audited, e.g., LRN, GTT or ALL. Default will be to audit ALL attributes.

(c) Indication whether to include non-ported numbers. For telephone numbers which fall within the range of telephone numbers specified and do not exist in the NPAC SMS database, then if this option is set these numbers will be audited, i.e., the NPAC SMS will ask the service provider's local SMS to return an indication if the record exists in its network or not. Default will be to not include non-ported telephone numbers.

8.2 NPAC User Functionality

Authorized NPAC personnel will have the capability to perform audits of the same nature as the service provider with some additional functionality. The NPAC SMS will provide a user interface for this purpose. This interface must support the following requirements of the audit function solely for execution by authorized NPAC personnel:

R8-4 NPAC personnel will be able to issue an audit request on a single telephone number.

R8-5 NPAC personnel will be able to issue an audit request for a range of telephone numbers. For the NPAC personnel there is no limit as to the size of the range specified.

R8-6 The NPAC must provide the capability to issue an audit request to be executed immediately or a specific time in the future.

R8-7 NPAC personnel will be able to specify if the audit request is to be periodic or a one time only request. Periodic audits can be specified to be issued weekly, monthly or quarterly. When a periodic type resumes execution, the audit will continue from where it last executed.

R8-8 The NPAC user must be able to specify execution restrictions for an audit request. Execution restrictions include the following:

(a) Start time and end time window for the time period when the audit should execute.

R8-9 The NPAC user must be able to specify the scope of an audit by defining one or more of the following parameters:

(a) Specific service provider network to be audited or ALL service provider networks.

(b) Full or partial audits, where the user can specify if one or ALL LNP attributes is to be audited, e.g., LRN, GTT or ALL. Default will be to audit ALL attributes.

(c) Indication whether to include non-ported numbers. For telephone numbers which fall within the range of telephone numbers specified and do not exist in the NPAC SMS, then if this option is set these numbers will be audited, i.e., the NPAC SMS will ask the service provider's local SMS to return an indication if the record exists in its network or not. Default will be to not include non-ported telephone numbers.

(d) Activation Date/Time stamp range, i.e., only audit records activated between a specific time window.

R8-10 The NPAC user must be able to obtain the status of an audit request.

R8-11 The NPAC personnel must be able to obtain an audit's progress. Progress might indicate the percentage of records audited or the directory number of the record currently being audited assuming the records will be audited in a sequential fashion.

R8-12 The NPAC personnel must be able to cancel an audit request.

R8-13 The NPAC personnel must be able to temporarily stop an audit which is currently in progress.

R8-14 The NPAC personnel must be able to resume an audit which was temporarily stopped by the user or was stopped due to a failure which is now resolved.

8.3 System Functionality

R8-15 All audit requests including requests issued by the service providers will be logged at the NPAC SMS and will be available for viewing by the NPAC personnel.

R8-16 In order to execute the audit request, the NPAC shall send the audit request to the local service providers' networks via the NPAC SMS to Local SMS interface described in the LNP SMS Interface Specifications.

R8-17 For all telephone numbers to be audited, the NPAC SMS will send the telephone number record as it appears in the NPAC SMS to each service provider's local SMS. Upon receipt of the audit request, the local SMS will verify if the telephone number's entire record contents differs in its local network. The service provider's local SMS will verify the record contents in all respective SCP databases. The service provider's local SMS will return an indication if any of its SCP databases is not in synch with the NPAC view of the data. For the case where non-ported numbers are being audited then the service provider's local SMS will report on the existence of the record in its LNP databases.

R8-18 For periodic type audits, the audit will resume execution from where it last stopped after its previous execution.

R8-19 The NPAC SMS must record all audit results in an audit log.

8.4 Audit Report Management

R8-20 Service Providers must be able to retrieve an audit report for a specific audit request via a specific transfer procedure offered for remote report retrieval as specified in the Reports management chapter.

R8-21 The NPAC SMS must generate an audit report for all audit requests. The audit report must indicate the following:

(a) Audit request parameters, e.g., Service Provider ID audited, telephone number range audited and other parameters which identified the scope of the audit.

(b) Date and Time of Audit.

(c) Progress key indication.

(d) Service Provider network which contains database conflict.

(e) A difference indicator which may indicate:

- mismatch between the NPAC SMS and local SMS
- record missing in local SMS
- record missing in NPAC SMS
- an audit failure
- no discrepancies found

R8-22 NPAC personnel must be able to generate and view an audit report.

R8-23 An audit report should be accessible while the audit is in progress so the current audit results can be viewed up to this point.

R8-24 The NPAC personnel must be able to output an audit report to a specified output device or to a text file.

R8-25 The NPAC personnel must be able to specify the length of time audit results will be retained in the audit log.

Section 9: Report Management

9.1 Overview

The NPAC SMS must support scheduled and ad hoc report generation for selectable reports. The report generation service shall create output report files according to specified format definitions, and distribute reports to output devices as requested.

A report distribution service is used to distribute report files to selected output devices.

Authorized NPAC personnel can request reports from active database, History Logs, Error Logs, traffic measurements, usage measurements, and performance reports.

Examples of the items available from active database are:

- List of ported TNs for a service provider
- List of pending subscription orders for a service provider
- Subscriptions without concurrence
- Status of pending subscription order for a TN being ported
- Date/Time Stamp of Subscription Port (Activation)
- Date/Time Stamp of Subscription Disconnect (Activation)
- Records that required conflict resolution
- Previous service providers and dates of service for ported TNs
- Date/Time Stamp of Broadcast time for transactions
- Subscription order records in error
- Download requests in error
- Log of Missing Response from SOA for order matching
- Log of Missing Response from Local SMS for downloads
- Log of Unauthorized Access Attempts
- Counts of events and usage as described in resource accounting.

Performance Reports

- CPU usage.
- Number of transactions handled and transactions per second.
- Measure of time starting from the receipt of subscription order activation to the broadcast of transaction to Local SMSs.
- Measure of time starting from the receipt of subscription order activation to the receipt of response from Local SMSs.

- NPAC SMS to Local SMS link utilization
- NPAC SMS to SOA link utilization

9.2 User Functionality

R9-1 The NPAC personnel must be able to select the type of report required.

R9-2 The NPAC personnel must be able to select the output device destination (printer or other destination) for the report.

R9-3 The NPAC personnel must be able to save/reprint reports from backed up output files.

R9-4 The NPAC personnel must be able to create customized reports through an ad-hoc facility.

R9-5 The NPAC personnel must be able to define scope and filtering for items to be included in the customized reports.

R9-6 The service provider users must be able to receive reports on information related to their activities.

R9-7 Vendors must provide examples of report outputs.

9.3 System Functionality

R9-8 The NPAC SMS must provide easy to read on-line and hard copy reports of the requested information.

R9-9 The NPAC SMS must verify whether the user requesting the report has the proper viewing privileges for the selected data.

R9-10 The NPAC SMS must support on-line file transfer capabilities (e.g., FTP or FTAM) to transfer report files.

R9-11 The NPAC SMS must maintain a History Log to keep track of transaction processed.

R9-12 The NPAC SMS must maintain an Error Log to keep track of transaction errors, transmission errors, unauthorized access attempts.

R9-13 Vendors must specify a list of available output device options.

Section 10: NPAC SMS Reliability, Availability, Performance and Capacity

This section defines the reliability, availability, performance and capacity requirements for the NPAC SMS.

10.1 Availability and Reliability

The NPAC SMS will be designed for high reliability, including fault tolerance and data integrity features, symmetrical multi-processing capability, and allow for economical and efficient system expansion. The system will adhere to the following availability and reliability requirements:

R10-1 It will be available 24 hours a day, 7 days a week.

R10-2 It's reliability will be 99.9%. This applies to all functionality and data integrity.

R10-3 The amount of unscheduled downtime per year will be <= 9 hours.

R10-4 For unscheduled downtime, the mean time to repair will be <= 1 hour.

R10-5 The amount of scheduled downtime per year will be <= 24 hours.

R10-6 It will be capable of monitoring the status of all of its communication links and be capable of detecting and reporting link failures.

R10-7 It will be capable of detecting and correcting single bit errors during data transmission between hardware components (both internal and external).

R10-8 If a failure occurs resulting in downtime of any functionality, affected transactions received immediately prior to the failure must be queued and processed when functionality resumes.

R10-9 The design will provide:

- Functional components with on board automatic self checking logic for immediate fault locating.
- Continuous hardware checking without any performance penalty or service degradation.
- Duplexing of all major hardware components for continuous operation in the event of a system hardware failure.
- Hardware fault tolerance that is transparent to the service providers.

R10-10 If the system becomes unavailable for normal operations due to any reason, including both scheduled and unscheduled maintenance, service providers must be notified of the system unavailability.

- When possible, the notification will be made via an electronic broadcast message to the service providers. When this is not possible, the NPAC will notify the service providers via their contact numbers.

- The notification will include, at a minimum, the functionality that is unavailable, the reason for the downtime, estimated length of the downtime and a NPAC contact number.

R10-11 During any maintenance, if resources allow only partial functionality, the capability of receiving, processing and broadcasting updates will be given the highest priority.

R10-12 It must provide system tolerance to communication link outages and offer alternate routing during such outages.

R10-13 For any downtime, either schedule or unscheduled, lasting more than 1 hour, the NPAC SMS will switch service providers to a backup or disaster recovery machine as described in section 2. In most cases, the time to switch the service providers to another machine and provide full functionality must not exceed the mean time to repair . However, in the event of a disaster that limits both the NPAC and NPAC SMS ability to function:

- The capability of receiving, processing and broadcasting updates must be restored within 24 hours.
- Full functionality must be restored within 48 hours.

The vendor is requested to describe the architecture used to satisfy the reliability and availability requirements, including any the use, if any, of a backup and/or disaster recovery machine and the use of any disaster recovery location. Alternatives to the backup and disaster recovery process flow in section 2 should be included here.

R10-14 Reports documenting the performance of the NPAC SMS in regards to the above requirements will be provided periodically to the service providers.

10.2 Capacity and Performance

The following requirements define the capacity and performance of the NPAC SMS. While the initial transaction rates and data storage requirements are not high, the NPAC SMS is expected to provide high performance and allow for future expansion. Refer to section 13 for future expansion possibilities.

R10-15 The system will be engineered to allow for 30 service providers having SOA and SMS interfaces. On initial turnup, it is expected there will be 10 service providers having SOA and SMS interfaces.

R10-16 Describe any capacity requirements related to the NPAC personnel who will be users of the NPAC SMS.

R10-17 It will be capable of handling the following transaction rates. Each record added or updated involves 1 transaction from the old service provider, 2 transactions from the new service provider and a broadcast to every service provider. Transaction rates are projected in three categories, i.e., High, Medium, and Low:

	HIGH	MEDIUM	LOW
Year 1:	70,000	50,000	25,000
Year 2:	100,000	70,000	50,000
Year 3:	500,000	250,000	100,000
Year 4:	750,000	500,000	250,000
Year 5:	1,000,000	500,000	500,000

The number of updates due to mass changes, the number of audit requests and the number of report requests is not known at this time.

R10-18 Data storage of the History file must keep track of all transactions made for one year (churn and new records.) It is assumed that there will be thirty percent churn of accumulated records.

R10-19 From the time an activation notice is received from the new service provider to broadcast out an update until the time the update is broadcasted to all service providers will be < 60 seconds.

R10-20 The response time from when a request or transaction is received in the system to the time an acknowledgment is sent to will be < 3 seconds. This does not include the transmission time across the interface to the service provider's SOA or SMS.

R10-21 The NPAC SMS must be expandable to handle any future growth due to circumstances described in section 13.

Section 11: Billing / Resource Accounting

11.1 Overview

Resource Accounting allows the tracking of NPAC resource usage data, which may be used as a basis for billing the service providers for their use of NPAC functionality. Resource Accounting is responsible for gathering the information into usage measurement categories, aggregating the measurements, and formatting and outputting the measurements to the appropriate entities (e.g., Billing Operations Applications, service providers). Other potential applications for usage information include cost allocation, marketing, and usage studies.

The NPAC system cost recovery methods should be designed to recover initial system costs, as well as the on-going operations/maintenance/administration costs. The vendors shall describe the cost drivers for NPAC HW/SW platform, including a breakdown of cost for the major features. The vendors may propose additional/alternate measurements that are based on their specific implementation, and provide measure of usage of the relevant cost causing elements in the NPAC system. The vendors shall describe their proposals for cost recovery and billing to the participating service providers.

The following are some examples of items measured for each service provider:

A. Duration of login session, date/time, service provider ID, user login ID, of login session
B. Number of transactions (port/disconnect/cancel) processed
C. Counts of types of updates made (e.g., # of port, # of disconnect)
D. Number of errors encountered in transactions
E. Number of errors encountered during transmission
F. Number of current records maintained
G. Number of pending records maintained
H. Number of history records maintained
I. Number of records downloaded as normal action
J. Number of records sent in response to a resend request
K. Number of records re-sent due to transmission problems
L. Number of records in conflict
M. Number of missing responses (e.g., during order matching)
N. Number of records audited on request
O. Number of records corrected (e.g., as result of audit)
P. Number of records queried/viewed
Q. Amount of data transported to Local SMS as bulk load update
R. CPU usage

S. Failures and maintenance problems in the NPAC SMS

Please indicate what other measurements may be made.

11.2 Assumptions

The service providers will be billed in proportion to their usage of the NPAC system services.

The resource accounting measurements will not cause degradation in the performance of the basic functions of the NPAC.

11.3 User Functionality

R11-1 The NPAC personnel shall be able to turn on or off the generation of usage measurements for each of the usage types.

11.4 System Functionality

R11-2 The NPAC SMS shall measure and record the usage of NPAC resources on a per service provider basis to cost allocation / billing.

R11-3 The NPAC SMS shall generate usage measurements for login sessions, for each service provider SP.

R11-4 The NPAC SMS shall generate usage measurements for the allocated mass storage (number of records stored), for each service provider.

R11-5 The NPAC SMS shall measure the number of transactions processed, for each service provider.

R11-6 The NPAC SMS shall measure the number of transactions downloaded to each service provider.

R11-7 The NPAC SMS shall measure the number of records sent in response to a request for resend of data from the service provider.

R11-8 NPAC should be able to render detailed periodic bills to the contracting entity.

Section 12: Number Portability Administration Center

12.1 Number Portability Administration Center (NPAC)

NPAC Role

The NPAC will be staffed by a neutral third party contractor who will be responsible for the administration and operational support services required by service providers in their use of the NPAC SMS. The NPAC must be run in support of consortium of local service providers. As a result of agreed-to guidelines, the NPAC will be involved in local ported number administration monitoring. Mechanized enforcement capabilities may or may not exist in the NPAC SMS to assist the NPAC in the monitoring and control functions.

Operational Functions

The primary roles of the NPAC are to assist users in obtaining reliable access to the NPAC SMS and to support all users encountering local ported number service provisioning problems resulting from NPAC SMS operation. To meet this need, the NPAC must support the following functional areas: System Administration, User Support, and System Support.

Administrative Functions

Administrative functions include all management tasks required to run the NPAC. The NPAC Contractor must be accountable for all personnel, legal, and financial management associated with the NPAC. These include, but are not limited to billing management, staffing, equipment and site procurement, facilities, and the contractor's own accounts payable obligations, which are part of day to day management. The NPAC contractor must provide for the administration of its staffing, contractual, financial, and operational needs. Proposals must specify how this will be accomplished.

The NPAC will be responsible for working with Local service providers to update data tables required to route calls for ported local numbers. The NPAC is also responsible for distributing the most current version of ported local number administration guidelines.

NPAC staff performing these activities needs to combine strong project planning skills, organizational management experience, interpersonal communication and negotiation skills, and a clear understanding of the day-to-day business issues associated with running a successful NPAC. The NPAC manager and administrative staff ideally would come from a data processing environment requiring these attributes.

System Administration

System administration is the NPAC operational group responsible for NPAC SMS logon administration, user access and customer data security, user notification of scheduled system downtime, and management and administration of the NPAC SMS information tables required to link customer records with the correct ported number service functions, features, and network routing information.

12.2 Logon Administration

Key Responsibilities

- Assist with new logon requests
- Verify logon signature approval
- Initialize logon ID, password, and security level
- Update data base and add new users
- Notify user of logon activation
- Resolve problems with existing logon IDs or passwords

Procedure Description

Logon Administration provides an individual requiring access to the NPAC SMS system with a unique logon ID and password upon receipt of an approved request form.

Access is initiated upon receipt of a completed NPAC SMS logon ID request form having the proper signature approvals from the requesting organization and the NPAC manager. After access approval, the logon administrator will assign the logon ID and appropriate security level corresponding to the type of NPAC SMS user. The user's security clearance sets the correct level of customer record access and NPAC SMS functional capabilities. After the logon is initialized and entered into the NPAC SMS, the users are informed of the logon activation, and a completed NPAC SMS logon ID request form is mailed back to them for their records.

Logon administration is responsible for resolution of any of the user's NPAC SMS access problems that the User Support group cannot solve. All problems should be recorded as NPAC consultation reports and entered as trouble reports into a mutually agreed upon trouble reporting system. The NPAC must attempt to resolve all problems in real-time. Those requiring additional assistance will be assigned a priority level in the trouble report system and the appropriate NPAC SMS support group will be contacted directly. The NPAC is required to report issue resolution status back to the reporting party on a timely basis.

12.3 Customer Record Security

Key Responsibilities

- Establish user boundaries through user access permission classes
- Assign new users to the correct security permission class
- Exercise absolute control of access to customer records
- Monitor and report unauthorized system access attempts

Procedure Description

Closely linked with logon administration is the procedure that provides the correct level of system access and customer data record access. The permitted level of access depends on the classification of NPAC SMS user. Before any logons are assigned, a security group will be associated with a specific classification of NPAC SMS user. The NPAC will establish boundaries for the appropriate level of customer record access and feature set functionality.

When the security groups are configured, any logon request that is received must be assigned to the correct user class. The logon Administrator is responsible for determining the correct group based on the organization that originates the request.

12.4 Scheduled System Unavailability Notification

Key Responsibilities

Notify users in advance of planned or known system unavailability

Procedure Description

In concert with the System Support group, System Administration is responsible for notifying NPAC SMS users of scheduled periods of system shutdown. These periods may be due to routine maintenance of the system or the result of non-critical system failures that require a brief and immediate shutdown of the system for repairs. Users are given sufficient warning to complete their current transactions and exit the system without loss of information. Users will usually be made aware of periods of system shutdown via electronic mail capabilities of the NPAC SMS.

12.5 Software Release Acceptance Testing

Key Responsibilities

- Update software test plans
- Allocate staff for performing tests
- Execute test plans
- Generate and resolve testing trouble reports
- Document test results
- Certify NPAC SMS software and release for operation

Procedure Description

The NPAC is required to perform acceptance tests on every release of the NPAC SMS system software before certifying it for operational release. The NPAC SMS release test plan must be reviewed and updated by the NPAC contractor for each NPAC SMS release, including testing of new features or existing features that have been modified and any major fixes that have been implemented. It is the responsibility of the NPAC contractor, as part of an acceptance test plan to fully regression test major releases.

The System Administration group is responsible for testing those functions associated with its specific procedural duties included in the NPAC release test plan. These include, but are not limited to the following:

System Logon and Security Features

NPAC SMS administrative data table update features

Customer record features

Electronic mailbox features

Completion of acceptance tests will result in a release certification report summarizing all the test results, including those errors encountered and the resolutions required to successfully pass the tests.

12.6 Service Administration

Key Responsibilities

- Create and maintain NPAC SMS data table
- Map table information to appropriate codes (e.g., NPA, LRN, GTT)
- Create and maintain descriptive data table labels

Procedure Description

The Tables Administration function within the System Administration group is responsible for creating and maintaining internal NPAC SMS data tables used to validate data entries and minimize user input errors through the use of appropriate quality assurance and quality control methods. There are several different types of tables which can be grouped into mapping, validation, and NPA splits/mass changes tables, which include, but are not limited to the following:

- Location Routing Number (LRN) tables
- Service Provider GTT information tables
- RAO codes
- Service Provider codes

The procedures associated with table administration vary depending on the table involved.

12.7 Mass Change Administration

Key Responsibilities

- Maintain a close working relationship with organizations responsible for NPA split/mass changes scheduling.
- Analyze split or mass change impact on NPAC SMS administrative tables
- Analyze split or mass change impact on NPAC SMS customer records
- Notify pending split to appropriate service provider service administration centers.
- Coordinate with data center vendor to execute NPAC SMS programs required to perform table and record modifications.

Procedure Description

The splitting of an NPA and the resulting mass changes required to NPAC SMS records are elements of an infrequent and complex process beginning more than one year before the cutover date. The NPAC becomes involved after receiving notification from the company responsible for the split. The goal of the NPAC is to transparently transition affected records in the NPAC SMS data base to reflect the new NPA information.

The first step in the process is to analyze the impact of the split on the NPAC SMS table and record information. After impact analysis and record sorting have been completed the NPAC will work closely with the NPAC SMS data center support group to include the modifications as part of the data base.

Specific tasks performed by the group are routine and procedural. Staff members will need to have clerical data processing skills and training in on-line computer processing. Types of problems resolved by the System Administration Staff will primarily concern user access and system security issues. Procedures are needed for mass changes other than NPA splits such as LRN or DPC changes.

User Support Group

The User Support Group is the primary NPAC contact for NPAC SMS users encountering problems with system features, or with inputting or accessing of their customer record data. The group would also be responsible for the dissemination of NPAC SMS status information, such as scheduled downtime, new software releases, documentation updates, and training registration information.

This group provides the NPAC SMS user a central point of contact for resolution of NPAC SMS problems and trouble reporting. Resolution of user problems will be handled primarily through the efforts of the User Support Group itself. Those issues requiring the efforts of another NPAC group will be promptly referred to the appropriate group. Issues requiring Vendor or NPAC SMS Data Center operations support must always be researched first by the responsible NPAC staff member. The key point of contact for users will always reside within the NPAC for NPAC SMS service issues.

12.8 User Problem Resolution

Key Responsibilities

- Resolve customer record access problems
- Clarify feature capabilities for users
- Resolve customer record input and modification problems
- Perform acceptance testing for new software releases
- Support link problem resolution with datalink protocol analysis capabilities

Procedure Description

The primary function of the User Support Group is solving the problems of the NPAC SMS user. Phone calls to the User Support Group must be dealt with as they are received, with the goal of real-time problem resolution (i.e., within one hour). If this requires the assistance of another group within the NPAC, the call should be transferred to a staff member who can better aid in resolving the issue. This requires the User Support staff to be knowledgeable in all NPAC responsibilities and aware of specific expertise. The NPAC is responsible for responding to the user with either an answer or a date by which an answer will be available. If the problem is determined to be critical it will be given priority within the NPAC.

12.9 Software Release Acceptance Testing

Key Responsibilities

- Update software test plans
- Allocate staff for performing tests
- Execute test plans
- Generate and resolve testing trouble reports
- Document test results
- Certify NPAC SMS software and release for operation

Procedure Description

The NPAC is required to perform acceptance test on every release of the NPAC SMS system software before certifying it for operational release. The NPAC SMS release test plan must be reviewed and updated by the NPAC contractor for each NPAC SMS release including testing of new features or existing features that have been modified. It is the responsibility of the NPAC contractor to fully regression test major releases.

The User Support group must work with the administrative organization to test those functions associated with its specific procedural duties included in the NPAC release test plan which include but are not limited to:

- Customer record features
- Electronic mailbox features
- Help messages

Resolution of testing problems must occur to complete testing and gain approval of the software release. Completion of the acceptance tests will result in a release certification report summarizing all the test results, including those errors encountered and the resolutions required to successfully pass the tests.

12.10 Software Update Notification

Key Responsibilities

- Notify users of upcoming NPAC SMS software releases

Procedure Description

In an administrative capacity, the User Support Group is responsible for keeping the NPAC SMS user community abreast of system software update activity. The notifications must include the specific reasons for the new release and summaries of what is being added, deleted, or modified with respect to system features and capabilities. If the release was unscheduled and is the result of resolution of several critical system problems, the notifications must summarize all problems being corrected. Updated documentation should be included as part of the software update.

12.11 Training Administration

Key Responsibilities

- Serve as primary contact for course schedules/registration information
- Ensure availability of all NPAC SMS training

Procedure Description

The User Support Group is responsible for managing the availability of NPAC SMS training courses and the handling of user registration requests. The NPAC may develop and administer all NPAC SMS training independently, or procure from another qualified training vendor, the facilities and instructors necessary to teach the courses. The training materials must be procured from a qualified vendor. The NPAC will also perform training registration. Course schedules will be negotiated between the User Support Group and the training vendor, based on course demand forecast by the User Support Group. The training vendor will be responsible for billing attendees directly.

12.12 Document Order Administration

Key Responsibilities

- Process documentation requests
- Provide billing documentation
- Initiate documentation update distribution
- Provide documentation description, ordering information and price list literature

Procedure Description

In an administrative capacity, the User Support Group is responsible for handling user requests for NPAC SMS documentation. The NPAC will maintain an inventory of available NPAC SMS documentation for quick processing of orders, as available. The NPAC will handle all customer billing for documentation. Phone in documentation inquiries should be handled immediately. If documentation description, pricing, or ordering information literature is requested, it must be mailed to requester within 24 hours. Orders should be accepted only from companies with active system logons and must be accompanied by a documentation request form. Facsimiles should be accepted in emergency situations. Documentation billing will be added to the NPAC SMS user's service bill.

12.13 Training and Documentation User Feedback

Key Responsibilities

- Getting appropriate user recommendations reflected in NPAC SMS system documentation and training material

Procedure Description

User feedback for NPAC SMS training and documentation is just as important as feedback receiver for the operational system itself. The User Support Group is responsible for recording the feedback received during phone in conversations. Those comments pertaining to training and documentation must be recorded and entered into the trouble reporting system just as a service problem would be entered. Analysis of the impact of a problem on training or documentation material should be included as part of the impact analysis done for every trouble report entered into the trouble system.

12.14 SCP Download Problem Resolution

Key Responsibilities

- Analyze and resolve exception report issues resulting from unsuccessful updates to Local service providers' networks

Procedure Description

Failures in the download of customer records to the service providers Networks served by NPAC SMS are reported to the NPAC User Support Group. User Support staff must resolve all download failures.

Failures will primarily be the result of unsuccessful sending of customer records and/or NPAC SMS administrative instructions to the receiving service provider network. Resolution of customer record download failures to an service providers network must have the highest priority. Resolution efforts must continue until the problem is solved, with the service provider receiving notification when the updates are successfully completed.

The User Support Group requires staff who are well versed in all NPAC SMS capabilities. The ability to learn from many different user problems and to quickly relate a given problem to a previous experience will ensure successful user support. The User Support staff must also speak English clearly, have excellent communication skills to effectively interact with NPAC SMS users and take prompt action to resolve problems.

System Support Group

The System Support group is responsible for resolving or coordinating resolution of all user or NPAC SMS problems relating to system availability or technical communication problems. This group will be responsible for maintaining reliable system communication linkages between NPAC SMS and all other local number systems that rely on NPAC SMS for information updates. These will include, but are not limited to service providers' networks used to perform call routing functions, Directory Assistance Provider's system (when available), local exchange carrier Revenue Accounting Offices, Signaling and Engineering Administration Centers (SEAC or equivalent organizations) and other NPAC SMSs. The NPAC SMS will generate a multitude of system performance, customer record, and problem exception reports. The System Support group must be able to interpret, generate, and distribute reports requested by an NPAC SMS user.

12.15 NPAC SMS Report Administration

Key Responsibilities

- Generate and distribute NPAC SMS reports to all requesting users who are entitled to receive reports
- Validate the accuracy of report contents
- Generate and distribute reports to NPAC SMS users who are entitled to receive reports and do not have local print facilities
- Resolve report interpretation problems

Procedure Description

The System Support group is the key point of contact for resolution of problems pertaining to NPAC SMS reports. The System Support group must ensure that the system is able to produce requested reports and assist in the validation and interpretation of any report. As with other NPAC SMS problems the System Support staff will file a trouble report in the system for evaluation and record keeping. Any NPAC SMS user with an active NPAC SMS logon can view or obtain copies of those reports allowed by the security associated with their logon ID.

12.16 Failure Recovery Administration and User Notification

Key Responsibilities

- Notify all NPAC SMS user groups of an unscheduled system shutdown or failure
- Serve as the key point of contact for system recovery status

Procedure Description

In the event of an unscheduled, instantaneous system shutdown or failure, the NPAC SMS Data Center operations staff will notify the NPAC System Support group within five minutes of failure. Within 15 minutes of failure, the NPAC will notify the NPAC SMS user community. Notification will be through an NPAC SMS broadcast message. If the system is not available the NPAC must provide a system status hotline number that users can call to obtain the latest system information. The NPAC will receive updated system status from the NPAC SMS data center at agreed upon intervals, and convey that information to the users via the NPAC SMS system or hotline. The NPAC will inform the NPAC SMS users of the data base status after the problem is fixed. Users will need to know the time period during which transactions were lost and affect restoration to the best of their abilities, while the NPAC will help in reconciliation.

12.17 NPAC SMS Interface Monitoring

Key Responsibilities

- Assist in the resolution of data communication problems with other NPAC SMS service systems (service providers, Operator Service Systems, RAOs, etc.)
- Provide technical assistance to NPAC SMS users experiencing problems accessing the system
- Generate automatic audit reports

Procedure Description

The objective of this System Support function is to provide reliable NPAC SMS user access and system communication with other ported number service system components through the performance of routing functional audits. These audits must be organized into a suite of tests that are run periodically, and at least every week. The results of these audits will be used by more technically trained staff to detect potential system performance or availability problems. In all cases the System Support group must be responsible for coordinating the resolution of issues involving user access to the NPAC SMS. NPAC SMS problems will typically be referred to System Support through phone calls received by the NPAC User Support group. All issues must be documented in the form of a NPAC consultation report, and, if due to a system failure, must be recorded as a trouble report in the trouble reporting system.

12.18 Software Release Acceptance Training

Key Responsibilities

- Update software test plans
- Allocate staff for performing tests
- Execute test plans
- Generate and resolve testing trouble reports
- Document test results
- Certify NPAC SMS software and release for operation

Procedure Description

The System Support group is responsible for testing those functions associated with its specific procedural duties included in the NPAC release test plan. These include, but are not limited to:

- NPAC SMS report availability verification
- NPAC SMS service maintenance and diagnostic procedures
- NPAC SMS-Service Provider administrative functions

Resolution of testing problems must occur to complete testing and gain approval of the software release. The NPAC will work with the platform provider to resolve NPAC SMS system related problems. All problems will be recorded in the trouble reporting system.

Key attributes staff members of the System Support group must possess the ability to diagnose a problem using a strong set of technical system skills, and quickly disseminate that information to the appropriate NPAC or Vendor Support groups to rectify the situation. Personnel staffing these positions need to have strong data processing, problem diagnosis and system communication skills and previous experience supporting a data processing operation. Specific skills include knowledge of the NPAC SMS System Vendor's Information Management System for data base systems, operating system, and their wide area data communications protocols.

NPAC Organizational Interface Requirements

In meeting contractual requirements the NPAC contractor will be required to interact with a diverse set of organizations, especially the full range of NPAC users. The most common user will be companies using the NPAC SMS as the centralized data base for their provisioning of ported local numbers for their customers. The NPAC will also work with the service providers' support and service administration organizations which use ported local number routing instructions. The NPAC must be able to work with service providers utilizing multiple software vendors. All users will identity their primary contacts to the NPAC for each area.

NPAC SMS Data Center

The NPAC contractor will also manage the data center operation and as such, they shall be required to provide hardware, operational support for NPAC SMS application(s) including systems engineering to integrate computer system and communications components. The NPAC SMS data center is redundant. (Further Reliability requirements are outlined in Section 10.)

The NPAC contractor will have direct contact with the data center operations staff to assist in resolution of NPAC SMS access and communication problems. Coordination of scheduling and execution of special NPAC SMS table administration, NPA splits, and mass change programs will be handled by the NPAC with the data center operation. The NPAC and the data center will share information necessary to plan for growth or reconfiguration of the hardware platform and communications.

12.19 Administration

The administrative staff must provide support and direction for the operational NPAC groups and manage the business and technical issues affecting the performance of NPAC services.

Key Responsibilities

- Plan NPAC staff for software acceptance testing, report acceptance results, and ensure problem resolution of discrepancies.
- Schedule staff training for new software features and updates
- Analyze documentation and training impact
- Coordinate testing and cutover with NPAC SMS data center operations
- Coordinate critical software release cutover
- Provide billing for service providers' usage
- Manage NPAC accounts receivable collection
- Manage NPAC accounts payable responsibilities
- Resolve any NPAC billing disputes
- Process bills to NPAC from data center operations and system vendor for support services
- Adjust Staffing Level Based on Forecast System Usage Demands
- Plan capital equipment based on required staffing levels and NPAC performance standards
- Manage NPAC facilities
- Monthly status reports on total billing, summary of customer service activities, transactions, and trouble reports, summary of administrative and other support activities
- List of trouble reports, with a breakdown between NPAC SMS and NPAC user complaints
- List of cleared trouble reports

12.20 Facilities Requirements

The NPAC must provide an actual or virtual point of presence in the Chicago LATA 358 in Illinois by which service providers can connect to the NPAC SMS. Service providers will be able to connect to the NPAC SMS by connecting to either the NPAC SMS facility location or to the Chicago LATA point of presence

The physical location of the NPAC facility is at the discretion of the NPAC contractor. The only limitation is that the facility must be within the continental United States. Identification of the proposed NPAC location must be included as part of the bidder's response.

The facility may be a separate building or be part of a larger facility owned or leased by the NPAC contractor. If the NPAC is located within a larger facility, space allocated to the NPAC must have the following characteristics:

- Be dedicated entirely for NPAC use
- Be a distinguishable area, separate from other parts of the facility by use of secure access points
- Be contiguous space so that all NPAC staff members are physically located within the same secure area

- Serve as the primary (and, if applicable, secondary) work areas for all NPAC functions to be performed
- Have sufficient and suitable telecommunications links available with diverse routing disaster protection
- Provide sufficient backup power to maintain operation through electrical outages of at least eight hours

The amount of space allocated by the NPAC contractor must be specified in proposals. The specification must include square footage and work space layouts for each of the NPAC staff members. It is recommended that each functional area specified have its own distinct work area. Any equipment required by the different groups should be located within the individual functional group work area, except for equipment deemed to be common to multiple NPAC groups (e.g., high-speed printers, data communication controllers) which may be located in a common area.

12.21 Telecommunications Requirements

Key Requirements

- Individual phone lines for staff members
- 24 hour hotline
- Voice messaging system
- Data communication facilities
- FAX Machine
- Each NPAC staff member must have an individual phone line to their desk. All phone lines must provide the capability of transferring a call to any other phone line within the NPAC.
- The NPAC must have a primary phone number (hotline) with direct inward dialing functionality. Staff members must be able to answer the hotline directly from their desks. This number will be the primary means of contact for the NPAC SMS users who have questions.
- The phone system must provide the capability to allow a caller to leave a message easily. This can be accomplished by an electronic messaging system that allows the caller to leave a message for the person called. In any case, a visual indication that a message has been left is required. The caller must be able to reach a "live" NPAC staff member at all times.
- The NPAC must provide a 24-hour hotline that will give the NPAC SMS user:
- Guaranteed Access to an Actual NPAC Staff Member 24 Hours a Day
- The latest NPAC SMS status available at times when the system may be unavailable during scheduled or unscheduled downtime.
- The choice of voice communication architecture, vendors, equipment, and services is totally at the discretion of the NPAC contractor. The goal of these choices should be to best meet the functionality and service requirements described above. The NPAC contractor will be responsible for the cost and services management of its voice communication facilities. The NPAC contractor will also be responsible for meeting or exceeding the required qualitative and quantitative performance levels that will be part